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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 91

[Docket No.: FAA-2022-1212]

Changes to Surveillance and Broadcast Services

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Notification of changes to surveillance services.

SUMMARY: This document announces termination of the Mode-S Traffic Information Service (TIS) at FAA terminal Mode-S radar sites. The FAA is replacing legacy terminal Mode-S radars via the Mode-S Beacon Replacement System (MSBRS) program, or may remove legacy terminal Mode-S radars as part of other ongoing activities. As each legacy terminal Mode-S Radar is replaced or removed, the FAA will no longer provide Mode-S TIS to capable transponders from that location. This change does not affect existing Traffic Information Service - Broadcast (TIS-B), Automatic Dependent Surveillance – Rebroadcast (ADS-R), or Automatic Dependent Surveillance – Same Link Rebroadcast (ADS-SLR) services currently provided to aircraft with a properly functioning Automatic Dependent Surveillance – Broadcast (ADS-B) system.

DATES: Effective June 23, 2023.

FOR FURTHER INFORMATION CONTACT: For technical questions concerning this document, contact: Michael Freie, Technical Advisor, Surveillance Services, AJM-4, Air Traffic Organization, Federal Aviation Administration, 600 Independence Avenue SW, Washington, DC 20597; telephone: 202-528-2337; email: michael.freie@faa.gov.

SUPPLEMENTARY INFORMATION:

Executive Summary

In 2018, the FAA performed an assessment of the safety impacts on general aviation owners and operators (from here on referred to as “the GA Community”) from the termination of

Mode-S Traffic Information Service (TIS). The purpose of this work was to communicate information on the removal of Mode-S TIS from the National Airspace System (NAS) through user outreach and engaging with non-governmental organizations (e.g., Aircraft Electronics Association (AEA), Aircraft Owner and Pilots Association (AOPA), Experimental Aircraft Association (EAA), and General Aviation Manufacturers Association (GAMA)). Taking into consideration the results of the FAA study and the benefits from the ADS-B In traffic services available in the NAS, the FAA determined that removal of Mode-S TIS had little to no significant adverse safety impact on the GA Community. Therefore, beginning in 2024, Mode-S TIS will terminate at each radar location as current Mode-S radars are replaced by the Mode-S Beacon Replacement System (MSBRS) program, or as legacy terminal Mode-S radars are removed as part of other ongoing activities. The GA Community should no longer rely on reception of Mode-S TIS information from FAA capable radars.

I. Background

In 2000, FAA implemented Mode-S Traffic Information System (TIS) via Mode-S radar data-link functionality. Mode-S TIS has also been referred to informally as TIS-A by some in industry. Mode-S TIS was implemented by FAA in response to an NTSB recommendation suggesting improvement of situational awareness information for the general aviation (GA) community not equipped with a traffic alert and collision avoidance system (TCAS). Reception of Mode-S TIS information was not a functionality that was required for Mode-S transponders. To this day, a very limited set of transponders are known to be capable of receiving and processing Mode-S TIS information from FAA terminal radars.

In May 2010, the FAA published 14 CFR 91.225 and 91.227, requiring aircraft to be equipped with Automatic Dependent Surveillance – Broadcast (ADS-B) Out equipment by 1 January 2020 in order to operate in certain U.S. airspace. ADS-B was identified as the backbone for the future of the FAA's Next Generation (NextGen) programs. From 2010 through 2020, the FAA funded deployment of approximately 700 ADS-B radio stations across the U.S. to provide

improved surveillance coverage across the NAS. Along with improving surveillance coverage, the FAA implemented functionality into ADS-B radio stations geared at providing appropriately equipped GA aircraft with enhanced situational awareness through both Traffic Information Services – Broadcast (TIS-B) and Automatic Dependent Surveillance – Rebroadcast (ADS-R).[1] In 2016, FAA funded the addition of Automatic Dependent Surveillance – Same Link Rebroadcast (ADS-SLR) service at the busiest U.S. airports with a surface surveillance system.[2]

In the decades following the initial Mode-S TIS deployment, the FAA implemented improved systems for provisioning information on proximate aircraft to GA pilots through the use of TIS-B, ADS-R, and ADS-SLR services. These new services expand beyond the currently provided Mode-S TIS. With the ADS-B mandate in effect since January 2020, and low-cost avionics systems for receiving and displaying ADS-B, ADS-R, ADS-SLR, and TIS-B information are readily available, the GA community is able to obtain a heightened situational awareness of the traffic around them. This is especially true when flying around the terminal areas where significant ADS-B coverage is available today.

As of March 6, 2023, approximately 133,486 aircraft have been identified as receiving ADS-B In information on one or both of the mandated ADS-B frequencies. The vast majority of these are general aviation aircraft due to the number of portable ADS-B In devices or integrated ADS-B In/Out systems available to this market.

Mode-S Radar Beacon Replacement System

Many FAA Mode-S terminal radars are approaching the end of their useful lifecycle. Additionally, the FAA is facing an increased maintenance cost from the inability to purchase parts, due to parts obsolescence or part shortages, necessary to ensure continued operational availability. To mitigate this, the FAA has initiated a radar modernization effort called the Mode-

[1] More information on TIS-B and ADS-R can be found at the FAA's NEXTGEN ADS-B website: https://www.faa.gov/nextgen/programs/adsb.

[2] FAA has two surface surveillance systems: ASSC (Airport Surface Surveillance Capability) and ASDE-X (Airport Surface Detection Equipment, Model X). See https://www.faa.gov/nextgen/programs/adsb/atc/assc and https://www.faa.gov/air_traffic/technology/asde-x.

S Beacon Replacement System (MSBRS) program. Under this program, the FAA intends to replace at least forty-six (46) aging Mode-S terminal radars starting in 2024. Starting in 2024 as the new MSBRS radars replace the existing terminal radars, the existing Mode-S TIS functionality will disappear at the location of each replaced terminal radar.

Replacement of the existing terminal radars capable of providing Mode-S TIS under the MSBRS Program will provide an improvement in air traffic control (ATC) capabilities, which will benefit civil and military aviation, including general aviation. Installation of the new state-of-the-art MSBRS radars will improve system operational reliability and reduce system down time.

During this timeframe, the FAA will continue to provide Mode-S TIS through the existing terminal radars until the existing radar is replaced with a new MSBRS radar. This document is intended to provide time for GA aircraft owners and operators who have not yet equipped with an ADS-B receiver to acquire and install, if appropriate, an ADS-B In capable system.

Other FAA surveillance system improvement activities

Independent of the MSBRS program, FAA is also engaged in multiple activities aimed at improving existing surveillance systems. These activities are aimed at reducing FAA operating costs and/or reducing congestion on surveillance system RF frequencies. As these activities proceed, FAA may remove one or more Mode-S terminal radars from operation, which would eliminate Mode-S TIS at that location.

II. Industry discussion on Mode-S TIS Removal

Using surveys and discussions with industry organizations, the FAA was able to obtain the necessary data required to understand the potential safety impacts from removing Mode-S TIS functionality from the existing terminal radars. FAA conducted surveys, such as the General Aviation/Part 135 Air Taxi Activity Survey, to produce a set of comprehensive data on part 91 and part 135 aircraft and their operations. The FAA reviewed data from survey reports for 2010,

2014, 2016, 2018, and 2019, and discussed these reports with industry association experts. The data from these reports were utilized to study the relevant surveillance equipage for all types of aircraft: Fixed Wing Piston, Fixed Wing turboprop single and multi-engine, turbojet, and rotorcraft.

Since 2018, the FAA has conducted industry briefings and discussions with major avionics manufacturing companies on the MSBRS program and the associated planned removal of Mode-S TIS from terminal radars. These discussions assisted in gathering pertinent information on equipage and gaining insight into potential concerns. Taking into consideration this information and the survey results, as well as the ADS-B In traffic services available to the cockpit via low-cost portable or integrated devices, the FAA determined that removal of Mode-S TIS had little to no significant adverse safety impacts on the GA Community.

III. Summary

Based on industry engagement, FAA has determined that the removal of Mode-S TIS functionality will have little to no safety impact on the GA community.

Removal of legacy terminal Mode-S radars may occur as part of other ongoing FAA activities to divest radars or which are being replaced with other modern cooperative surveillance systems. These activities are being pursued to lower FAA operating costs and/or reduce congestion on surveillance system RF frequencies.

Aircraft operating within ADS-B mandated airspace, specified under 14 CFR 91.225, have transitioned their avionics equipment to be compliant with the performance requirements of the regulation. If the ADS-B Out equipment is performing and configured properly, aircraft equipped with ADS-B In are capable of receiving ADS-R, ADS-SLR, and TIS-B services from the FAA ADS-B ground stations across the NAS. These low-cost ADS-B In avionics systems are widely available, and provide the GA community with a heightened situational awareness of the traffic around them which was not previously available using solely Mode-S TIS information.

These services expand coverage and more than replace the information currently provided by Mode-S TIS.

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